18. A device of claim 16, said mixing means comprising means to reciprocate the heat-decomposing appliance in the axial direction while axially rotating the heat-decomposing appliance, leaving horizontal.

19. A device of claim 16, said moving means comprising a cross type motor robot with a mechanical hand or a mechanical hand and cross type motor robot with axis for rotating it.

REMARKS

A new Abstract is provided, hereby, as required in the instant Office Action. The specification is, also, amended hereby to insert a new section headed "Brief Description of the Drawings," which contains a brief description of Figs. 1-15. Other changes made, hereby, to the specification reflect the same changes made in the parent application (Serial No. 09/206,161) in order to effect language more commensurate with the drawings. These changes, also, address the objection to the drawings made in the Office Action, as explained below.

Claims 2-19 are pending.

Claim 2 is amended, hereby, in order to more clearly define the instant invention, i.e., the step of "heating the appliance to decompose the organics into testing components" is changed by the instant Amendment to read "heating the appliance with the tube axially aligned horizontally to decompose the organics into testing components," as set forth in the specification, for example, at page 15, last two lines. Claims 2, 5, 6, 8, and 10, are amended, hereby, by changing "which may

sometimes contain organics" to read "containing organics." Device claim 5 is rewritten, hereby, as an independent claim. New independent "device" claim 14 is supported by original claim 5. New claims 15-20 correspond to claims 7, 9, and 11-13, made dependent, directly or indirectly, on claim 14.

The drawings were objected by the instant Office Action, in that reference character "2" was identified with both "interchangeable ground joint" and "common grinding." By the instant Amendment, all appearances of "common grinding" have been changed to "interchangeable ground joint," thus, overcoming the objection.

Claims 5-13 would be allowable, according to the Office Action, if rewritten independently of the rejected claims and amended to overcome the rejection under Section 112, second paragraph. Applicants wish to thank the Examiner for timely notification of allowable subject matter. In accordance with the Office Action, claims 5-13 are rewritten independently of the rejected claims and amended to overcome the rejection under Section 112, second paragraph. As such, claims 5-13, as amended hereby, are in order for allowance.

Claims 2-13 were rejected under 35 USC 112, second paragraph, as allegedly being indefinite by reciting "may sometimes contain." As the phrase at issue is deleted from the claims by the instant Amendment, the rejection is overcome.

Claim 2 was rejected under 35 USC 102(b) based on alleged admissions of prior art in the specification paragraph bridging pages 6 and 7. Reconsideration is requested.

First of all, any admission of prior art found in the specification paragraph bridging pages 6 and 7 is limited to such admission as described, therein. As such, the alleged "admission of prior art" set forth in the statement of rejection does not accurately reflect what is described in the specification paragraph at issue. For example, according to the statement of rejection, the method of Ono, as allegedly admitted, "disclose[s] a sample which [is] dropped into the top of a vertical closed combustion tube heated in a furnace"; whereas, the specification describes the procedure whereby a "sample wrapped in combustion assistant is dropped from the top of [a] vertical closed combustion tube heated in [a] furnace." Accordingly, the statement of rejection incorrectly sets forth the specification description that allegedly is an admission of prior art.

Secondly, the rejection of claim 2 is overcome by the instant Amendment, which limits the presently claimed method to a heating step in which the "tube" (in which the sample is heated) is "axially aligned *horizontally or slantly*" (*emphasis added*). On the other hand, Ono teaches heating a sample in a "vertical closed combustion tube," as admitted in the statement of rejection (Office Action, page 4)(*emphasis added*).

To anticipate the claim, each claim limitation must "*identically* appear" in the reference disclosure. *Gechter v. Davidson*, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997) (*emphasis added*). The absence from a prior art reference of a single claim limitation negates anticipation. *Kolster Speedsteel A B v. Crucible Inc.*, 230 USPQ 81 (Fed. Cir. 1986). To be novelty defeating, a reference must put the public in possession of the identical invention claimed. *In re Donahue*, 226 USPQ 619 (Fed. Cir. 1985).

As explained, above, the method of present claim 2 is limited to heating a sample in a tube, the tube being "axially aligned horizontally or slantly." This limitation on present claim 2 is absent from the teachings of Ono as alleged in the statement of rejection; that is, the method of Ono involves the tube being aligned vertically during heating, i.e., neither horizontally nor slantly aligned during heating, as presently claimed. Accordingly, a limitation on claim 2 being absent from Ono, as alleged in the statement of rejection, anticipation is negated. *Kolster Speedsteel AB, supra.* Anticipation being negated, withdrawal of the rejection under 102(b) is in order.

Claims 2-4 were rejected under 35 USC 103(a) as allegedly being unpatentable based on JP 9-274030 (Ono). Reconsideration is requested.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). A "ground of rejection is simply inadequate on its face . . . [when] the cited references do not support each limitation of [the] claim." *In re Thrift*, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002). When conducting an obviousness analysis, "all limitations of a claim must be considered in determining the claimed subject matter as is referred to in 35 U.S.C. 103 and it is error to ignore specific limitations distinguishing over the [prior art] reference." *Ex parte Murphy*, 217 USPQ 479, 481 (PO Bd. App. 1982).

The rejection under Section 103(a) cannot be maintained for the same reasons set forth, above, in connection with the rejection of claim 2 under Section 102(b). That is, the invention as defined in the rejected claims includes a limitation that is not found in the cited prior art, i.e., the limitation of heating when the tube is "axially aligned horizontally or slantly." Since all claim limitations are not found in the cited reference, a rejection of claims 2-4 (as presently amended) under Section 103 "is simply inadequate on its face." *Thrift*, 63 USPQ2d at 2008. As such, withdrawal of the rejection under Section 103 is in order.

Moreover, the rejection cannot be maintained because it relies on speculation instead of the requisite prior art evidence. The statement of rejection admits that Ono fails to meet the rejected claims by failing to disclose the amount of oxygen gas being "not less than 2.5 times the amount of oxygen gas required for complete combustion of the sample" (claim 4) and the tube having a length "of at least 10 cm" (claims 2-4). However, according to the statement of rejection it would have been obvious to modify Ono to use the presently claimed features (limitations) missing from the reference allegedly "since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In Re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)" (Office Action, page 5-6). The statement of rejection incorrectly sets forth the standard (law) in connection with an obviousness finding based on alleged optimization of a variable taught in the prior art.

Where the *optimization* of a claim variable was not recognized in the art as effecting the claimed result, the result is unobvious. *In re Antonie*, 195 USPQ 6, 8 (CCPA 1977). That a

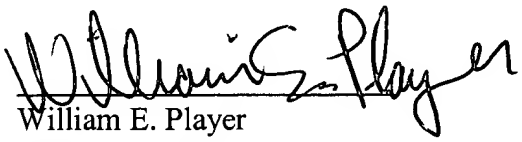
difference with the prior art amounts to an alleged "optimal condition . . . is not a substitute for some teaching or suggestion supporting an obviousness rejection." *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). When obviousness of a claim limitation is grounded on its allegedly being "old and well known in the art . . . as a means of optimization which is highly desirable," the "ground of rejection is simply inadequate on its face . . . because the cited references do not support each limitation of [the] claim." *Thrift*, 63 USPQ2d at 2008.

In the present situation, obviousness is based solely on the difference between the cited reference and the present claims being "an optimum value of a result effective variable." No prior art evidence, whatsoever, is provided in support of the alleged obviousness of modifying teachings in Ono in order to effect the invention as defined in the rejected claims. Since the rejection is based solely on an allegedly desirable optimization of the prior art, the "ground of rejection is simply inadequate on its face" as the reference relied on to reject the claims does "not support each limitation of [the] claim." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection, is therefore, in order.

Favorable action is requested.

Respectfully submitted,

JACOBSON·HOLMAN PLLC

By: 
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***Marked Up Version of Amendments***

*Rewrite paragraph bridging pages 8 and 9 as*:

As a result of diligent investigations to solve the problems aforementioned, the inventors have developed a closed heat-decomposing appliance being an appliance for horizontally or slantly injecting heating section into an electric furnace to heat, decomposing the inner organics in the presence of oxygen gas, taking out from the electric furnace and cooling, then introducing the absorbing liquid to absorb the analyzed components, comprising a heating section made of quartz, hard glass or ceramic with one side closed and other side having [common ground portion, screw portion] ground joint, screw joint or [O-ring-mounted portion] O-ring-mounted joint and a closed introducing section that allows to connect to this heating section and ground glass joint screw joint or O-ring-mounted joint via O-ring-mounted portion and has cock or valve as a mechanism for closing and introducing the absorbing liquid to absorb the testing components from outside after heat-decomposition, or has packing or septum to introduce the absorbing liquid with needle pipe as well. Further, they have found following knowledges by implementing a method for heat-decomposing a sample which may sometimes contain organics using this appliance and for absorbing the testing components in sample, leading to the completion of the invention.

*Page 14, please delete the first full paragraph and replace it with the following paragraph*:

The connecting form of closed introducing section to the heating section of the inventive appliance is not particularly restricted, provided that, even if the inner pressure inside the appliance may somewhat fluctuate during treatment of sample, the connection can be achieved leaklessly, and, for example, [common grinding] ground joint, screw, O-ring etc. mentioned. Here, the shape of O-ring is not

particularly restricted and, in short, it is only necessary to have a circular hole at central portion and to be able to connect the closed introducing section to the heating section.

*Rewrite the paragraph bridging pages 19 and 20 as:*

Fig. 1 is a schematic diagram of cross section of the inventive appliance in the axial direction. In Fig. 1, number 1 is an example using quartz tube with one side closed and other side having [common grinding 2] interchangeable ground joint 2. In place of this quartz tube 1, those made of said materials such as hard glass tube and alumina ceramic tube can also be used. To this [common grinding 2] interchangeable ground joint 2, absorbing liquid-introducing section made of hard glass etc. and provided with two-way cock 3 and absorbing liquid reservoir 4 is connected. On actual pretreatment, after oxygen and sample were set up in the quartz tube 1, two-way cock 3 is closed, heat-decomposition is performed followed by cooling, then absorbing liquid is accommodated in the absorbing liquid reservoir 4, and two-way cock 3 is opened to introduce the absorbing liquid into tube for use.

*Page 20, delete the first full paragraph and replace it with the following paragraph*:

Fig. 2 is a schematic diagram of cross section of the inventive appliance in the axial direction. In Fig. 2, numeral 1 is an example using quartz tube with one side closed and other side having [common grinding 2] interchangeable ground joint 2. To this [common grinding 2] interchangeable ground joint 2, absorbing liquid-introducing section as described above, made of hard glass etc. and provided with absorbing liquid reservoir 4 and solenoid valve 5 is connected. On actual pretreatment, operation may be made similarly to the case of appliance shown in Fig. 1.

*Rewrite the paragraph bridging pages 23 and 24 as:*

The injecting means to be used in the inventive device is not particularly restricted, if it can hold the inventive appliance cooled by said cooling means and inject the absorbing liquid without leak of gas of the testing components produced by decomposition of sample set up in the inventive appliance. For example, when using the inventive appliance that opens and shuts the closed introducing section closed with cock or valve on introduction of the absorbing liquid, a mechanism for injecting under pressure from tube connected to cock or valve using various pumps etc., a mechanism for sucking the absorbing liquid from tube connected to cock or valve, making the inside negative pressure by cooling the inventive appliance, and the like can be used. Moreover, when using the inventive appliance that is closed with packing or septum and introduces the absorbing liquid with needle pipe, a mechanism for injecting under pressure from tube connected to needle pipe using various pumps etc. and the like can be used. Thereamong, preferably, in the case of appliance comprising the closed introducing section with packing or septum to introduce the absorbing liquid with needle pipe as a mechanism for introducing the absorbing liquid for absorbing the testing components from outside, an absorbing liquid-injecting mechanism comprising needle pipe, motor buret, valve with actuator, moving mechanism of needle pipe and [washing port] <u>washing place</u>, wherein the needle pipe is pierced through the packing or septum of the inventive appliance by moving mechanism, the absorbing liquid is introduced by switching the valve with actuator and working the motor buret, and then needle pipe is moved to the [washing port] <u>washing place</u> moving mechanism to wash the contaminated needle pipe, is preferable for use.

*Rewrite the paragraph bridging pages 27 and 28 as:*

Fig. 9 is a schematic diagram of the mechanism for injecting the absorbing liquid into the inventive appliance. In Fig. 9, numeral 15 is the inventive appliance with packing or septum, numeral 22 is needle pipe, numeral 23 is motor buret, numeral 24 is valve with actuator, numeral 25 is moving mechanism of needle pipe and numeral 26 is [washing boat] washing place. The needle pipe 22 is pierced through packing or septum of the inventive appliance 15 by moving mechanism 25, and, after injected the absorbing liquid in absorbing liquid reservoir 27 by switching valve 24 with actuator and working motor buret 23, the needle pipe 22 is moved to [washing port] washing place 26 by moving mechanism 25 to wash the contaminated needle pipe with washing liquid in the washing liquid reservoir 28.

*Page 28, line 10 to page 29, line 2, delete in its entirety and insert*:

Further, in the mechanism for injecting the absorbing liquid to the inventive appliance, it is also possible to inject as follows.

The [the] inventive appliance is connected to cock (solenoid valve) and the cock is connected to motor buret accommodated with absorbing liquid via tube. [to inject the] The absorbing liquid is injected [into] to the inventive appliance by opening cock and working motor buret.[Or, the]

The inventive appliance is connected to cock and the cock is connected to plunger pump accommodated with absorbing liquid via tube [to inject the]. The absorbing liquid is injected [into] to the inventive appliance by opening cock and working plunger pump. [Or, the]

The inventive appliance is connected to valve and the valve is connected to motor buret accommodated with absorbing liquid via tube [to inject the]. The absorbing liquid is injected [into] to the inventive appliance by switching valve to connect the motor buret to the inventive appliance and working motor buret. [Or, the]

The inventive appliance is connected to valve and the valve is connected to absorbing liquid reservoir accommodated with absorbing liquid via tube [to inject the]. The absorbing liquid is injected [into] to the inventive appliance by cooling the inventive appliance to make the inside of appliance negative pressure and switching valve to connect the absorbing liquid reservoir to the inventive appliance.

*Page 32, delete 1st complete paragraph and replace it with the following paragraph*:

Besides, the results etc. obtained in following examples 1 through 20 are collectively shown, respectively; type of sample, quantity of sample, [theoretical amount of oxygen] theoretical consumption amount of oxygen, amount of oxygen at heating section of the inventive appliance and ratio of amount of oxygen at heating section to [theoretical amount of oxygen] theoretical consumption amount of oxygen in Table 1; material of heating section, length on injection of sample into furnace, heating temperature, heating time, material of sample boat, type of absorbing liquid used and angle on slating sample in Table 2; contents of halogen and sulfur derived theoretically from sample (theoretical value), contents of halogen and sulfur obtained as a result (observed value) and recovery rate being a ratio therebetween (observed value/theoretical value) in Table 3.

*Rewrite the paragraph bridging pages 36 and 37 as:*

About 5 mg of S-benzylthiuronium chloride (from Kishida Kagaku Co.) were weighed out accurately into a platinum boat with length of 5 mm, width of 15 mm and height of 4 mm using microbalance M-3 from Metler Co., and inserted deep in a closed heat-decomposing appliance (length of tube: 30 cm, inner diameter of tube: 16 mm, outer diameter of tube: 18 mm) shown in Fig. 1. After injected oxygen, the appliance was stoppered at the absorbing liquid-introducing section. This closed heat-decomposing appliance was inserted horizontally as far as about 20 cm

[beforehand] from the side of sample into a circular electric furnace (from Isuzu Seisakusho Co., attached with temperature controller EC5600 from Okura Electric Co.) heated to 1000 °C and heated beforehand for 5 minutes. Then, the closed heat-decomposing appliance was drawn out from the furnace, cooled, and injected with 2.5 ml of absorbing liquid comprising an aqueous solution of 0.04 mol/L sodium hydroxide and 24 % by weight of hydrogen peroxide from two-way cock, followed by shaking, which was allowed to stand for 30 minutes. Thereafter, the inside of the closed heat-decomposing appliance including ground portion was washed with pure water and diluted to 50 ml to submit to IC measurement.

*Page 37, delete first full paragraph and replace it with the following paragraph*:

As for IC, CCPM (specified for resin) from Tosho Corp. was used for pump, CM-8010 (electroconductivity detector) from Tosoh Corp. for detector, CO-8011 from Tosoh Corp. for column oven, SC-8020 from Tosoh Corp. for integrator, TSK gel IC-Anion-PwPEEK (4.6 mm I.D. x 50 mm) from Tosoh Corp. for analytical column, and 1,3 mM potassium gluconate-1.3 mM borax-30 mM boric acid-5 % acetonitrile-0.5 % [glycerine] glycerol for mobile layer, and measurement was made under flow rate of 1.2 ml/min, column temperature of 40 °C and [sample injection level] sample injection volume of 100 μL. The calibration curve was prepared by appropriately diluting anion standard solution from Wako Pure Chemical Industries Ltd. to measure the absorbed liquid after decomposition of sample.

*Page 38, delete the first complete paragraph and replace it with the following paragraph*:

Except that a fire-resistant ABS kneaded 100 parts of ABS (trade name JSR ABS10) from Japan Synthetic Rubber Co. with 26 parts of brominated epoxy resin flame retardant (trade name YDB-408) from [Tokyo Kasei Co.] Toto Kasei Co. and 8.7 parts of flame retardant Sb 203 (trade name Flame Cut 610R) from Tosoh Corp.

was used for the sample, sample was pretreated similarly to Example 1 to implement the IC measurement. As a result, to the content (% by weight) of 9.73 % for Br in this substance determined from the quantity charged, the average and relative standard deviation on seen measurements (two appliances were used repeatedly five times and two times for each appliance) were 9.62% (RSD = 1.53 %).

*Rewrite the paragraph bridging pages 43 and 44 as:*

Except that the same closed heat-decomposing appliance as that in Example 4, excluding use of hard glass [tube with one side closed] as a material, and [hard glass boat] sample boat were used, and the temperature of furnace and heating time were made to be 600 °C and 30 minutes, respectively, sample was treated similarly to Example 4 to implement the IC measurement similarly to Example 1. As a result, the theoretical contents (% by weight) of 17.49 % for Cl and 15.82 % for S in S-benzylthiuronium chloride, 17.90 % and 15.43 % were obtained for Cl and S, respectively.

*Page 44, delete the first complete paragraph and replace it with the following paragraph*:

Except that the same closed-heat decomposing appliance as that in Example 1, excluding use of alumina ceramic [tube with one side closed] as a material, was used, sample was pretreated similarly to Example 1 to implement the IC measurement. As a result, to the theoretical contents (% by weight) of 17.49 % for Cl and 15.82 % for S in S-benzylthiuronium chloride, 17.44 % and 15.77 % were obtained for Cl and S, respectively.

IN THE CLAIMS

Rewrite the claims as follows.

2 (twice amended). A pretreatment method of a sample comprising the steps of setting up the sample ~~which may sometimes contain~~ containing organics in a heat-decomposing appliance comprising, in the absence of firing means:

a) a heating section in the form of an axially aligned tube, open at only one of two opposing axial ends, having a length between said opposing axial ends of at least 10 cm and being molded of material that withstands (i) corrosive gases, (ii) oxidative corrosion, and (iii) heating to a temperature of at least 600°C; and

b) an introducing section that cooperates with the open end of said tube to seal the open end and, thereby, close said heating tube for heat decomposition when containing organic components, said introducing section including means for introducing liquid through said introducing section into said heating tube when closed;

heating of said appliance being effected only by external means, said appliance containing no source of heat;

filling up the appliance with oxygen and closing the appliance, then heating the appliance with the tube axially aligned horizontally to decompose the organics into testing components, followed by cooling the appliance, and thereafter introducing ~~the~~ absorbing liquid into said heat-decomposing appliance to absorb the testing components produced in said sample.

5 (twice amended). A device for heat-decomposing a sample, ~~which may sometimes contain~~ containing organics, using ~~the~~ a pretreatment method ~~according to claim 2~~ comprising the steps of setting up the sample in a heat-decomposing appliance comprising, in the absence of firing means:

a) a heating section in the form of an axially aligned tube, open at only one of two opposing axial ends, having a length between said opposing axial ends of at least 10 cm and being molded of material that withstands (i) corrosive gases, (ii) oxidative corrosion, and (iii) heating to a temperature of at least 600°C; and

b) an introducing section that cooperates with the open end of said tube to seal the open end and, thereby, close said heating tube for heat decomposition when containing organic components, said introducing section including means for introducing liquid through said introducing section into said heating tube when closed;

heating of said appliance being effected only by external means, said appliance containing no source of heat;

filling up the appliance with oxygen and closing the appliance, then heating the appliance to decompose the organics into testing components, followed by cooling the appliance, and thereafter introducing an absorbing liquid into said heat-decomposing appliance to absorb the testing components produced in said sample,

comprising an appliance-installing section to install said closed heat-decomposing appliance, a heating means to heat-decompose the sample in said closed heat-decomposing appliance and a

moving means to reversibly move said closed heat-decomposing appliance installed at said appliance-installing section to said heating means.

6 (twice amended). A pretreatment method of a sample using the device of claim 5, comprising the steps of setting up the sample ~~which may sometimes contain~~ containing organics together with oxygen in the heat-decomposing appliance closing, and then heating said heat-decomposing appliance with the device to decompose the organics ~~which may be sometimes contained in said sample~~.

8 (twice amended). A pretreatment method of a sample using the device of claim 7, comprising the steps of setting up the sample ~~which may sometimes contain~~ containing organics together with oxygen in the heat-decomposing appliance and closing, then heating said heat-decomposing appliance with said heating means to decompose the organics ~~which may be sometimes contained in said sample~~, thereby producing the testing components, cooling said heat-decomposing appliance, injecting ~~the~~ absorbing liquid into said heat-decomposing appliance to dissolve the testing components, and further stirring and/or shaking said heat-decomposing appliance to make said absorbed liquid in the heat-decomposing appliance uniform.

10 (twice amended). An analytic method using the device of claim 9, comprising the steps of setting up the sample ~~which may sometimes contain~~ containing organics together with oxygen in

the heat-decomposing appliance and closing, then heating said heat-decomposing appliance with said heating means to decompose the organics, followed by cooling, injecting the absorbing liquid to dissolve the testing components, stirring and/or shaking said heat-decomposing appliance to make the absorbed liquid in the heat-decomposing appliance uniform, and then analyzing the testing components in absorbed liquid.

12 (twice amended). A device of claim 9, said mixing means comprising means to reciprocate the heat-decomposing appliance in the axial direction while axially rotating the heat-decomposing appliance, leaving horizontal.